SYPHILIS *(including congenital)*

DISEASE REPORTING

In Washington

DOH receives 9 (1996) to 57 (2001) reports of primary and secondary syphilis per year.

Purpose of reporting and surveillance

- To assure the adequate treatment of infected individuals in order to curtail infectiousness and prevent sequelae of infection.
- To identify, contact, and treat sexual contacts of reported cases in order to break the chain of transmission.
- To prevent HIV infection.

Reporting requirements

- Health care providers: notifiable to Local Health Jurisdiction within 3 work days
- Hospitals: notifiable to Local Health Jurisdiction within 3 work days
- Laboratories: notifiable to Local Health Jurisdiction within 2 work days; specimen submission required
- Local health jurisdictions: notifiable to DOH Infectious Disease and Reproductive Health within 7 days of case investigation completion or summary information required within 21 days

CASE DEFINITION FOR SURVEILLANCE

PRIMARY SYPHILIS

Clinical criteria for diagnosis

A stage of infection with *Treponema pallidum* characterized by one or more chancres (ulcers); chancres might differ considerably in clinical appearance.

Laboratory criteria for diagnosis

- Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, direct fluorescent antibody (DFA-TP), or equivalent methods.

Case definition

- Probable: a clinically compatible case with one or more ulcers (chancres) consistent with primary syphilis and a reactive serologic test (nontreponemal: Venereal Disease Research Laboratory [VDRL] or rapid plasma reagin [RPR]; treponemal: fluorescent

treponemal antibody absorbed [FTA-ABS] or *Treponema pallidum* particle agglutination (TP-PA).
- Confirmed: a clinically compatible case that is laboratory confirmed.

SECONDARY SYPHILIS

Clinical criteria for diagnosis

A stage of infection caused by *T. pallidum* and characterized by localized or diffuse mucocutaneous lesions, often with generalized lymphadenopathy. The primary chancre may still be present.

Laboratory criteria for diagnosis

- Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, DFATP, or equivalent methods.

Case definition

- Probable: a clinically compatible case with a nontreponemal (VDRL or RPR) titer ≥ 4.
- Confirmed: a clinically compatible case that is laboratory confirmed.

LATENT SYPHILIS

Clinical criteria for diagnosis

A stage of infection caused by *T. pallidum* in which organisms persist in the body of the infected person without causing symptoms or signs. Latent syphilis is subdivided into early, late, and unknown categories based on the duration of infection. When initial infection has occurred within the previous 12 months, latent syphilis is classified as early latent.

Case definition

- Probable: no clinical signs or symptoms of syphilis and the presence of one of the following:
    - No past diagnosis of syphilis, a reactive nontreponemal test (i.e., VDRL or RPR), and a reactive treponemal test (i.e., FTA-ABS or TP-PA).
    - A past history of syphilis therapy and a current nontreponemal test titer demonstrating fourfold or greater increase from the last nontreponemal test titer.

CONGENITAL SYPHILIS

Clinical criteria for diagnosis

A condition caused by infection in utero with *Treponema pallidum*. A wide spectrum of severity exists, and only severe cases are clinically apparent at birth. An infant or child (aged <2 years) may have signs such as hepatosplenomegaly, rash, condyloma lata, snuffles, jaundice (nonviral hepatitis), pseudoparalysis, anemia, or edema (nephrotic syndrome and/or malnutrition). An older child may have stigmata (e.g., interstitial keratitis, nerve deafness, anterior bowing of shins, frontal bossing, mulberry molars, Hutchinson teeth, saddle nose, rhagades, or Clutton joints).

Laboratory criteria for diagnosis

- Demonstration of *T. pallidum* by darkfield microscopy, fluorescent antibody, or other specific stains in specimens from lesions, placenta, umbilical cord, or autopsy material.

Case definition

- Probable: a condition affecting an infant whose mother had untreated or inadequately treated (any nonpenicillin therapy or penicillin administered <30 days before delivery) syphilis at delivery, regardless of signs in the infant, or an infant or child who has a reactive treponemal test for syphilis and any one of the following:
    - Any evidence of congenital syphilis on physical examination,
    - Any evidence of congenital syphilis on radiographs of long bones,
    - A reactive cerebrospinal fluid (CSF) venereal disease research laboratory (VDRL),
    - An elevated CSF cell count or protein (without other cause),
    - A reactive fluorescent treponemal antibody absorbed—19S-immunoglobulin M (IgM) antibody test, or
    - IgM enzyme-linked immunosorbent assay.
- Confirmed: a case that is laboratory confirmed.

Congenital and acquired syphilis may be difficult to distinguish when a child is seropositive after infancy. Signs of congenital syphilis may not be obvious, and stigmata may not yet have developed. Abnormal values for CSF VDRL, cell count, and protein, as well as IgM antibodies, may be found in either congenital or acquired syphilis. Findings on radiographs of long bones may help because radiographic changes in the metaphysis and epiphysis are considered classic signs of congenitally acquired syphilis. The decision may ultimately be based on maternal history and clinical judgment. In a young child, the possibility of sexual abuse should be considered as a cause of acquired rather than congenital syphilis, depending on the clinical picture. For reporting purposes, congenital syphilis includes cases of congenitally acquired syphilis among infants and children as well as syphilitic stillbirths.

Case definitions for early latent, late latent, neurosyphilis, and syphilitic stillbirth are available in Case Definitions for Infectious Conditions Under Public Health Surveillance, MMWR 46, RR-10; http://www.cdc.gov/mmwr/PDF/rr/rr4610.pdf.

A. DESCRIPTION

1. Identification

An acute and chronic treponemal disease characterized clinically by a primary lesion, a secondary eruption involving skin and mucous membranes, long periods of latency, and late lesions of skin, bone, viscera, the CNS and cardiovascular system. The primary lesion (chancre) usually appears about three weeks after exposure as an indurated, painless ulcer with a serous exudate at the site of initial invasion. Invasion of the bloodstream precedes the initial lesion, and a firm, nonfluctuant, painless satellite lymph node (bubo) commonly follows.

Infection may occur without a clinically evident chancre; i.e., it may be in the rectum or on the cervix. After 4-6 weeks, even without specific treatment, the chancre begins to involute and, in approximately one third of untreated cases, a generalized secondary eruption appears, often accompanied by mild constitutional symptoms. This symmetrical maculopapular rash involving the palms and soles, with associated lymphadenopathy, is classic. Secondary manifestations resolve spontaneously within weeks to 12 months; again, about one third of untreated cases of secondary syphilis will become clinically latent for weeks to years. In the early years of latency, there may be recurrence of infectious lesions of the skin and mucous membranes.

CNS disease, manifested as acute syphilitic meningitis, may occur at any time in secondary or early latent syphilis, later as meningovascular syphilis, and finally as paresis or tabes dorsalis. Latency sometimes continues through life. In other instances, and unpredictably, 5-20 years after initial infection, disabling lesions occur in the aorta (cardiovascular syphilis) or gummas may occur in the skin, viscera, bone and/or mucosal surfaces. Death or serious disability rarely occurs during early stages; late manifestations shorten life, impair health and limit occupational efficiency. Concurrent HIV infection may increase the risk of CNS syphilis; neurosyphilis must be considered in the differential diagnosis of an HIV infected individual with CNS symptoms.

Fetal infection occurs with high frequency in untreated early infections of pregnant women and with lower frequency later in latency. It frequently causes abortion or stillbirth and may cause infant death due to preterm delivery of low birthweight infants or from generalized systemic disease. Congenital infection may result in late manifestations that include involvement of the CNS and occasionally cause such stigmata as Hutchinson teeth, saddlenose, saber shins, interstitial keratitis and deafness. Congenital syphilis can be asymptomatic, especially in the first weeks of life.

The laboratory diagnosis of syphilis is usually made by serologic tests of blood and CSF when indicated. Reactive tests with nontreponemal antigens (e.g., RPR [rapid plasma reagin] or VDRL [Venereal Disease Research Laboratory]) need to be confirmed by tests that employ treponemal antigens (i.e., FTA-Abs [fluorescent treponemal antibody absorbed], or TP-PA [*T. pallidum* particle hemagglutination), when available, to aid in excluding biological false-positive reactions. For screening newborn infants, serum is

preferred over cord blood, which produces more false-positive reactions. Primary and secondary syphilis can be confirmed by darkfield or phase-contrast examination or by FA antibody staining of exudates from lesions or aspirates from lymph nodes if no antibiotic has been administered. Serologic tests are usually nonreactive during the early primary stage while the chancre is still present; a darkfield examination of all genital ulcerative lesions can be useful, particularly in suspected early seronegative primary syphilis.

2. Infectious Agent

Treponema pallidum, subspecies *pallidum*, a spirochete.

3. Worldwide Occurrence

Widespread; in the US sexually active young people between 20 and 29 years of age are primarily involved. Racial differences in incidence reflect social rather than biological factors. Syphilis is usually more prevalent in urban than rural areas, and in some cultures, in males more than in females.

The rate of Primary & Secondary (P&S) syphilis in the United States declined by 89% from 1990 through 2000. Nevertheless syphilis remains an important problem in the South and in some urban areas in other regions of the country. Recently, outbreaks of syphilis among men who have sex with men (MSM) have been reported, possibly reflecting an increase in risky behavior in this population associated with the availability of highly active antiretroviral therapy for HIV infection. In the US the continuing decrease in the rate of congenital syphilis reflects the substantial reduction in the rate of P&S syphilis among women that has occurred in the last decade, however, early venereal and congenital syphilis have increased significantly throughout much of the rest of the world since 1957.

4. Reservoir

Humans.

5. Mode of Transmission

By direct contact with infectious exudates from obvious or concealed, moist, early lesions of skin and mucous membranes of infected people during sexual contact; exposure nearly always occurs during sexual intercourse. Transmission by kissing or fondling children with early congenital disease occurs rarely. Transplacental infection of the fetus occurs during the pregnancy of an infected woman.

During the past 50 years, transfusion-transmitted syphilis has become extremely rare because of improved donor selection processes, universal serologic screening, and the shift from fresh blood components to transfusion of refrigerated products. Only 3 cases of transfusion-related syphilis have been reported in the English literature in the last 35 years. Infection by contact with contaminated articles may be theoretically possible but is

extraordinarily rare. Health professionals who neglected to wear protective gloves have developed primary lesions on the hands following clinical examination of infectious lesions.

6. Incubation period

From 10 days to 3 months, usually 3 weeks.

7. Period of communicability

Communicability exists when moist mucocutaneous lesions of primary and secondary syphilis are present. However, the distinction between the infectious primary and secondary stages and the noninfectious early latent stage of syphilis is somewhat arbitrary with regard to communicability, since primary and secondary stage lesions may not be apparent to the infected individual. The lesions of secondary syphilis may recur with decreasing frequency up to four years after infection. However, transmission of infection is rare after the first year. Consequently, in the United States infectious early syphilis is usually defined as ending after the first year of infection.

Transmission of syphilis from mother to fetus is most probable during early maternal syphilis but can occur throughout the latent period. Infected infants may have moist mucocutaneous lesions that are more widespread than in adult syphilis and are a potential source of infection.

8. Susceptibility and resistance

Susceptibility is universal, though only approximately 30% of exposures result in infection. Infection leads to gradual development of immunity against *T. pallidum* and, to some extent, against heterologous treponemes; immunity often fails to develop because of early treatment in the primary and secondary stages. Concurrent HIV infection may reduce the normal host response to *T. pallidum*.

B. METHODS OF CONTROL

1. Preventive measures:

Preventive measures: In general, the following preventive measures are applicable to all STDs: syphilis, HIV infection, chancroid, lymphogranuloma venereum, granuloma inguinale, gonorrhea, herpes simplex virus infection, genital human papillomavirus infections (genital warts), trichomoniasis, bacterial vaginosis, sexually transmitted hepatitis B, chlamydial infections and genital mycoplasma.

Emphasis on early detection and effective treatment of patients with transmissible syphilis and their contacts should not preclude search for people with latent syphilis to prevent relapse and disability due to late manifestations.

a. Educate the community in general health promotion measures; provide health and sex instruction that teaches the value of delaying sexual activity until onset of sexual maturity as well as the importance of establishing mutually monogamous relationships and reducing numbers of sexual partners. Syphilis serology should be included in the workup of all cases of STD and as a routine part of prenatal examination. Congenital syphilis is prevented by serologic examination in early pregnancy and again in late pregnancy and at delivery in high prevalence populations. Serologic titers may be checked monthly in women at high risk for reinfection or in geographic areas in which syphilis is high. The clinical and antibody response should be appropriate for the stage of disease. New infections should be treated.
b. Protect the community by preventing and controlling STDs in sex workers and their clients by discouraging multiple sexual partners and anonymous or casual sexual activity. Teach methods of personal prophylaxis applicable before, during and after exposure, especially the correct and consistent use of condoms.
c. Provide health care facilities for early diagnosis and treatment of STDs; encourage their use through education of the public about symptoms of STDs and modes of spread; make these services culturally appropriate and readily accessible and acceptable, regardless of economic status. Establish intensive case-finding programs that include interviewing patients and partner notification; for syphilis, repeated serologic screening within special populations with known high incidence of STDs. Follow cases serologically to exclude other STD infections such as HIV.

2. Control of patient, contacts and the immediate environment:

a. Report to local health authority. Confidentiality of the individual must be safeguarded.
b. Isolation: For hospitalized patients, universal precautions for blood and body secretions should be applied. Patients should refrain from sexual intercourse until treatment is completed and lesions disappear; to avoid reinfection, they should refrain from sexual activity with previous partners until they have been examined and treated.
c. Concurrent disinfection: None in adequately treated cases; care to avoid contact with discharges from open lesions and articles soiled therewith.
d. Quarantine: None.
e. Immunization of contacts: None available.
f. Investigation of contacts and source of infection: A fundamental feature of programs for syphilis control is the interviewing of patients to identify sexual contacts from whom infection was acquired in addition to those whom the patient may have infected. Trained interviewers obtain best results. The stage of disease determines the criteria for partner notification: a) for primary syphilis, all sexual contacts during the 3 months preceding onset of symptoms; b) for secondary syphilis, contacts during the preceding 6 months; c) for early latent syphilis, those of the preceding year, if time of primary and secondary lesions cannot be established; d) for late and late latent syphilis, marital partners and children of infected mothers; and e) for congenital syphilis, all persons, including hospital personnel, who have had close

unprotected contact with a patient with early congenital syphilis before identification of the disease or during the first 24 hours of therapy, should be examined clinically for the presence of lesions 2 to 3 weeks after contact. Serologic testing should be performed and repeated 3 months after contact or sooner if symptoms occur. If the degree of exposure is considered significant, immediate treatment should be considered. All identified sexual contacts of confirmed cases of early syphilis exposed within 90 days of examination should receive treatment. Patients and their partners should be encouraged to obtain HIV counseling and testing.

Infants born to all seroreactive mothers should be treated with penicillin, if adequate treatment of the mother prior to the last month of pregnancy cannot be established.

g. Specific treatment for adults: Long acting penicillin G (benzathine penicillin), 2.4 million units given in a single IM dose on the day that primary, secondary or early latent syphilis, is diagnosed; this assures effective therapy even if the patient fails to return.

Alternative therapy for nonpregnant penicillin allergic patients: either doxycycline PO, 100 mg twice daily for 14 days, or tetracycline PO, 500 mg 4 times/day for 14 days.

Serologic testing is important to ensure adequate therapy; tests are repeated at 3 and 6 months after treatment and later as needed. In HIV infected patients, testing should be repeated at 1, 2 and 3 months, and at 3-month intervals thereafter. Any fourfold titer rise indicates the need for retreatment.

Failure of nontreponemal tests to decline fourfold by 3 months after therapy for primary or secondary syphilis identifies those at risk of treatment failure. Increased dosages and longer periods of therapy are indicated for the late stages of syphilis (i.e., benzathine penicillin G, 7.2 million units total, administered as 3 doses of 2.4 million units IM at 1-week intervals). Consideration should be given to analysis of the CSF, especially if increased risk of neurosyphilis exists: those who have failed therapy, those who are infected with HIV, and those with neurologic findings.

For neurosyphilis, aqueous crystalline penicillin G, 18-24 million units a day administered as 3-4 million units IV every 4 hours for 10-14 days. An alternative therapy is procaine penicillin, 2-4 million units IM daily, plus probenecid PO, 500 mg orally, 4 times/day, both for 10-14 days. Success in therapy should be checked by following serologic titers and appropriate CSF examinations every 6 months until cell count is normal.

Penicillin sensitive pregnant women should have their allergy confirmed with skin tests to the major and minor penicillin determinants, if the test antigens are available. Erythromycin can be used for penicillin sensitive pregnant women but this has high failure rates. Patients with confirmed penicillin allergy can be desensitized and then given the dose of penicillin indicated by the stage of their syphilis.

For early congenital syphilis, aqueous crystalline penicillin G, 100,000-150,000 units/kg/day administered as 50,000 units/kg/dose, given IV or IM every 12 hours during the first 7 days of life, and every 8 hours thereafter for 10-14 days or Procaine penicillin G 50,000 units/kg/dose IM in a single daily dose for 10 days. For late congenital syphilis, if the CSF is normal and there is no neurologic involvement, children can be treated as for latent syphilis. If the CSF is abnormal, treatment for

neurosyphilis is required: 200,000 units/kg/d of aqueous crystalline penicillin G every 6 hours for 10-14 days.

h. All patients who have syphilis should be tested for HIV infection.

3. Epidemic measures

Intensification of measures outlined under B1 and B2, above.

4. International measures

a. Examine groups of adolescents and young adults who move from areas of high prevalence of treponemal infections.
b. Adhere to agreements among nations (e.g., Brussels Agreement) as to records, provision of diagnostic and treatment facilities and contact interviews at seaports for foreign merchant seamen.
c. Provide for rapid international exchange of information on contacts.
d. WHO Collaborating Centres.